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DEPARTMENT OF COMMERCE -- BUREAU OF MINES

MINE EXPLOSIONS IN THE UNITED STATES DURING THE FISCAL YEAR ENDING JUNE 30, 1928 [1]

By D. Harrington[2]

The attached tabulation gives data concerning explosions in the United States to which the attention of the United States Bureau of Mines was directed during the year June 30, 1927, to July 1, 1928. One of the explosions which killed two men was at a metal mine, and was caused by methane ignition from an open light; the other 30 explosions occurred in coal mines, and resulted in a total of 340 fatalities. Explosions listed in the table are not restricted to major disasters (those causing five or more fatalities), as in some of the instances listed there were no fatalities and in others only one, two, three, or four.

Twenty-four of the ignitions were in bituminous mines, 6 in anthracite, and 1 in a metal mine; there were 321 fatalities in the 24 explosions in bituminous mines, 19 fatalities in the 6 anthracite explosions, and 2 deaths in the 1 explosion at the metal mine.

Ignition was caused by electricity in 14 explosions from which 282 fatalities resulted; open lights or smoking were responsible for 12 ignitions and 49 deaths; explosives caused 3 ignitions and 9 deaths; and in 2 explosions causing 2 deaths the igniting cause was not ascertained.

Of the 31 explosions (including the explosion in a metal mine) 14 were in open-light mines, causing 51 fatalities; 15 were in closed-light mines, causing 289 fatalities; and the data are not available as to lighting method in 2 mines where 2 explosions took 2 lives. In the 14 explosions in open-light mines, 9 explosions with 41 fatalities were started by open lights which ignited methane, 3 with 9 fatalities were due to ignitions from blasting, and 2 with 1 fatality were of unknown origin. Of the 15 explosions in closed-light (electric cap lamp) mines, 14 with fatality toll of 282 were of electrical origin and 1 with 7 fatalities was charged against smoking, though there was a strong suspicion that the cause may have been electrical also.

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2 - Chief engineer, safety division, U. S. Bureau of Mines.

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The fact that 15 out of the year's 30 explosions in coal mines (omitting the one from the metal mine) were in closed-light mines and that 14 of the 15 (possibly the entire 15) were of electrical origin is decidedly disquieting, indicating one or both of the following conditions: Relaxation of precautionary measures as to ventilation when closed lights are installed; or, the presence of an electrical hazard, existing either in the electrical installations or electrical practices or in both in our mines, which manifests itself much more definitely in closed than in open light mines.

The electrical ignitions (all of methane) were as follows:

Nonpermissible electrical mining machine	2
Nonpermissible storage-battery locomotive	3
Mining machine nips or nipping	3
Trolley locomotive	2
Cable of combination trolley-cable reel locomotive	1
Cable-reel locomotive	1
Multiple shot-firing battery	1
Faulty wiring	1
	14

In addition there were two ignitions where mining machines were suspected, though the cause was actually ascribed to smoking in one case and to an open light in another. In several instances smoking in closed-light mines was suspected as the igniting cause, though later on the responsibility (except in one instance) was placed elsewhere. The flame safety lamp was under suspicion in a few cases, but later was "absolved of blame."

With the exception of the three explosions caused by explosives, all of the ignitions concerned methane primarily, though in many instances coal-dust undoubtedly later entered into the extension of the affair.

Of the 24 bituminous mines in which explosions are known to have occurred during the fiscal year ending June 30, 1928, 10 are reported as having used rock-dust, 11 had never used rock-dust, and data as to rock-dusting in 3 are not at hand. There were 258 fatalities in the 10 mines reported as having used rock-dust, and 62 fatalities occurred in the 11 mines which are reported as not having at any time used rock-dust. Generalized rock-dusting had been in effect in none of the 10 mines reputed as having used rock-dust, and in most of the mines probably not as much as 1 per cent of the mine had at any time been rock-dusted. Although rock-dust is said to have been of aid in some instances in reducing the area covered by the explosion and although credit has been given rock-dusting in a few cases as having contributed to saving of life, it is improbable that the comparatively small amount of rock-dusting which has been done in any of these mines contributed much toward preventing extension of the explosion. At any rate, the most disastrous explosion of the year (as was also true of the preceding year) was in a so-called rock-dusted mine; in both instances, however, no claim was made that the mine in question had ever been thoroughly rock-dusted over all surfaces in all accessible parts of the mine, or that the rock-dusting had been kept up-to-date.

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The outstanding lessons of the explosion record of the past year are that ventilation is undoubtedly being neglected in many of our coal mines, especially in many of our closed-light mines; that there is carelessness in installation or operation (or both) of electrical equipment in mines which give off explosive gas, especially in those which are using closed lights; that rock-dusting is not being done in nearly as many coal mines as it should be; and that in the comparatively few mines which are using it the rock-dusting is not being even approximately done or maintained in anything like an adequate manner. The bright side of the picture is that explosions and explosion fatalities from open-light ignitions are being reduced materially, undoubtedly because of the rapid extension of the use of closed lights; it is now estimated that more than half of our coal tonnage comes from closed-light mines. The number of explosion disasters with loss of life from use, or rather misuse, of explosives seems to be reaching almost the vanishing point, partly because of the use of permissible explosives and partly because much of the blasting is now done when the working shift is not in the mine, so that any explosions which do occur from blasting usually result either in no loss of life or else in a life loss which is confined to a very limited number.

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SUMMARY OF MINE EXPLOSIONS BY STATES, JULY 1, 1927, TO JUNE 30, 1928, INCLUSIVE

States	Lights				Fatalities and ignition causes									
	Open	Closed	Unknown	Total	Electricity		Open light or smoking		Explosives		Unknown		Total	
					Deaths	Ignitions	Deaths	Ignitions	Deaths	Ignitions	Deaths	Ignitions	Deaths	Ignitions
Alabama	3			3			2	3					2	3
Arkansas	1			1			13	1					13	1
Illinois		2		2	21	1	7	1					28	2
Kansas	1			1					0	1			0	1
Michigan[1]	1			1			2	1					2	1
Oklahoma	1	1	1	3	3	1			1	1	0	1	4	3
Kentucky	1	2		3	15	2			8	1			23	3
Pennsylvania	1	7	1	9	224	7	4	1			2	1	230	9
Washington		2		2	2	2							2	2
West Virginia	5	1		6	17	1	21	5					38	6
Totals	14	15	2	31	282	14	49	12	9	3	2	2	342	31

1 Metal mine.

The above table is a record of explosions in the United States to which the attention of the safety division of the United States Bureau of Mines was directed during the fiscal year July 1, 1927, to June 30, 1928.

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